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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/678,088	10/06/2003	Masayuki Nakayasu	0425-1082P	4496
2292	7590	03/09/2006	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			GOODEN JR, BARRY J	
			ART UNIT	PAPER NUMBER
			3616	
DATE MAILED: 03/09/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/678,088	<b>Applicant(s)</b> NAKAYASU ET AL.	
	<b>Examiner</b> Barry J. Gooden Jr.	<b>Art Unit</b> 3616	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/21/05 (Amendment).
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/21/05</u> . | 6) <input type="checkbox"/> Other: _____  |

#### DETAILED ACTION

1. This is a response to the amendment filed December 21, 2005. Claims 1-14 are currently amended and claims 15-18 are currently added.

#### *Claim Objections*

2. Claims 10 and 12 is objected to because of the following informalities:

In regards to claim 10, [[ to act in an oblique direction directly ]] should be replaced with -- acting in a direction oblique --.

In regards to claim 12, [[ housing or the central axis of the inflator housing, ]] should be replaced with -- housing; in other words, the central axis of the inflator housing --.

In regards to claim 14, [[ a filter which catches fragments of the rupturable plate being disposed in the gas discharge passage extending from ]] should be replaced with -- a filter, which catches fragments of the rupturable plate, being disposed in the gas discharge passage which extends from --.

Appropriate correction is required.

#### *Claim Rejections - 35 USC § 112*

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 1, [[and the axial direction of the igniter does not exactly oppose a surface of the rupturable plate]] is unclear. If, "an axial direction of the inflator housing is orthogonal to an axial direction of the igniter", then the axial direction of the igniter would inherently directly oppose a surface of the rupturable plate.

Examiner suggests removing the terminology.

In regards to claim 2, "at a portion exactly opposing the rupturable plate" is unclear.

Claim 2 is unclear because it is specific to the embodiment of Figure 1, and claim 1, in reciting "and the axial direction of the igniter does not exactly oppose a surface of the rupturable plate", is not inclusive of the embodiment shown in Figure 1. Thus when claim 2, which is dependent on claim 1, suggests that the fragile portion **provided in the igniter** is exactly opposing the rupturable plate. These claims are not in agreement.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5, 6, 9 and 14/1 rejected under 35 U.S.C. 102(e) as being anticipated by Nanbu et al., US Patent 6,676,157 B2.

In regards to claims 1, 5, 6, 9, and 14, Nanbu et al. show an inflator comprising:

a cylindrical inflator housing (10) which is closed at one end (right side of Figure 4) thereof and opened at the other end (14), and in which a pressurized gas is charged; and,

a diffuser portion (40) connected to an opening (14) of the inflator housing (10), and having a gas discharge port (See Figure 4);

an igniter (300), provided spaced apart from the rupturable plate (16) prior to an activation of the igniter (300) for rupturing the rupturable plate (16) disposed in the diffuser portion (40) such that an axial direction of the inflator housing (10) is orthogonal to an axial direction of the igniter (300) and the axial direction of the igniter (300) does not exactly oppose a surface of the rupturable plate (16); and,

means (passage) for directing a rupturing energy generated by activation of the igniter (300), in a direction that exactly opposes the rupturable plate (16) to rupture the rupturable plate (16);

wherein said means is a guiding passage for guiding the rupturing energy discharged from the igniter (300) to the rupturable plate (16) formed in the diffuser portion (40), and the rupturing energy is guided to a central portion of the rupturable plate (16) or a portion thereof in the vicinity of the central portion by action of the guiding passage (See Figure 4);

wherein the guiding passage comprises a cap, which surrounds at least an igniting portion of the igniter (300) and is disposed in a direction orthogonal to the axial direction of the inflator housing (10), and a hole which is provided at a position, on a side face of the cap, which exactly opposes the rupturable plate (16);

wherein the pressurized gas is charged in a single space (12) defined by the cylindrical inflator housing (10) and the diffuser portion (40);

further comprising: a filter (42) which catches fragments of the rupturable plate (16) being disposed in the gas discharge passage extending from the rupturable plate (16) to the gas discharge port (See Figure 4).

6. Claims 10-13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Horton et al., US Patent 6,629,703 B2.

In regards to claims 10-13 and 15, Horton et al. show all of the claimed elements including an inflator comprising:

a cylindrical inflator housing (10) which is closed at one end (12) thereof and opened at the other end (18) and in which (11) a pressurized gas is charged;

a diffuser portion (30,31) which is connected to an opening portion (19) of the inflator housing (10) and having a gas discharge port;

a gas discharge passage extending from the inflator housing (10) to the gas discharge port of the diffuser portion (30,31), at least one portion of the gas discharge passage being closed by a rupturable plate (17);

an igniter (3), for rupturing the rupturable plate (17), disposed in the diffuser portion (30,31), such that the axial direction (A) of the inflator housing (10) and the axial direction (C) of the inflator (3) obliquely

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cross with each other, the igniter (3) generating a rupturing energy acting in a direction oblique to the rupturable plate (17) to rupture the rupturable plate (17);

further comprising: a diffuser tube (32), having a second gas discharge port, connected to the gas discharge port of the diffuser portion (30,31);

wherein the diffuser tube (32) is arranged such that the diffuser tube (32) is coaxial to the inflator housing (10) or the central axis of the inflator housing (10) and the central axis of the diffuser tube (32) are parallel to each other (See Figures 3 and 4); and,

wherein the diffuser tube (32) has a plurality of second gas discharge ports in a peripheral face thereof and the plurality of second gas discharge ports are provided circumferentially at equal intervals (See Figure 4).

#### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 2, 4, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nanbu in view of Swann et al., US Patent 6,295,935 B1.

In regards to claims 2, 4, 7, and 8, Nanbu shows all of the claimed elements including a cap (320) which surrounds an igniting portion of the igniter (300) disposed in a direction orthogonal to the axial direction of the inflator housing (See Figure 4); however, Nanbu does not show a fragile portion surrounded by a groove or notch, provided in the igniter or the cap.

Swann et al. teach a groove or notch (122) surrounding a fragile portion (142a) shaped like an arrowhead (Swann et al., Figures 4 and 5) and used to create a stress riser thereby reducing the force required to rupture the rupturable plate.

It would have been obvious to one having ordinary skill in the art at the time of invention to modify the invention of Nanbu with the groove or notch section in view of the teachings of Swann et al. to include a fragile portion in either the igniter or the cap surrounding the igniter. Such a modification would reduce the force required to rupture the fragile portion, and provide a stress riser ensuring the cap (106 and 108) would consistently rupture at the correct portion, thereby increasing the rupturability of the invention.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nanbu in view of Frey.

In regards to claim 3, Nanbu discloses all of the claimed elements except for the igniter with a hole and sealing tape.

Frey et al. teach an igniter (412) with a hole (422) and sealing tape (434) closing the hole used to provide an easily rupturable orifice that remains hermetically sealed.

It would have been obvious to one having ordinary skill in the art at the time of invention to modify the invention of Nanbu to include an orifice and sealing tape in view of the teaches of Frey et al. Such a modification would ensure a hermetical seal and increase the reliability of the rupturability of the invention according to Nanbu (Frey et al., Figure 8).

11. Claim 14/10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horton et al., in view of Nanbu.

In regards to claim 14/10, Horton et al. show all of the claimed elements except for a filter being disposed in a gas discharge passage.



Nanbu teaches a filter (42) which catches fragments of the rupturable plate (16) being disposed in the gas discharge passage extending from the rupturable plate (16) to the gas discharge port (See Figures 1-4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inflator of Horton et al. in view of the teachings of Nanbu to include a filter so as to provide a secure guard against pieces of the rupturable plate entering the airbag cushion or the air which an occupant may breathe.

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horton et al. in view of Nanbu.

In regards to claim 16, Horton et al. show all of the claimed elements including: an inflator, comprising:

a cylindrical inflator housing (10) provided with an opening portion (19) at one end thereof and a closed portion (12) at the other end thereof, and including a pressurized gas (11) therein;

a diffuser portion (30,31) connected to the opening (19) portion and having a gas discharge port, the diffuser portion (30,31) including therein a gas passage extending from the inflator housing (10) to the gas discharge port (See Figure 4);

a rupturable plate that closes at least a portion of the gas passage;

an igniter (1) provided within the diffuser portion (30,31), the igniter (1) generating a combustion product upon activation thereof.

Horton does not disclose the igniter being orthogonal to the axis of the inflator housing or having a deforming member provided between the igniter and the rupturable plate.

Nanbu teaches of an igniter (300) disposed orthogonal to an inflator housing (10) and having a deforming member (36), which is a portion of a circumferential portion of a cap (340) surrounding the igniting portion of the igniter, between the igniter (300) and the rupturable plate (16), and being deformed ("the sealing plate 36 is broken" (Column 4, Line 67 - Column 5, Line 1) by the combustion product to cause the rupturable plate (16) to rupture by a deformation thereof.



It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the inflator of Horton et al. in view of the teachings of Nanbu to include an igniter orthogonal to the housing and a deforming member so as to reduce the length of the diffuser required so the overall length of the inflator may be reduced and to provide a secure means of rupturing the rupturable plate.

13. Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horton et al. in view of Nanbu as applied to claim 16 above, and further in view of Swann et al.

In regards to claims 17 and 18, Horton et al. in view of Nanbu teaches all of the claimed elements including the deforming member (36) being a circumferential portion of a cap (340) that surrounds and igniting portion of the igniter; yet, excluding the deforming member being formed in a single piece before activation of the inflator.

Swann et al. teach of a rupturable portion (94) formed in a single piece with the cap (90) of the igniter (50) and being disposed in a diffuser section and connected to the diffuser through the igniter (50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the cap of Horton et al. in view of Nanbu in view of the teachings of Swann et al. to include a deforming member being a single piece with the cap so as to reduce the number of parts in the overall assembly.

#### ***Response to Arguments***

14. Applicant's arguments with respect to claim 1, 2, 5, 6 and 9, have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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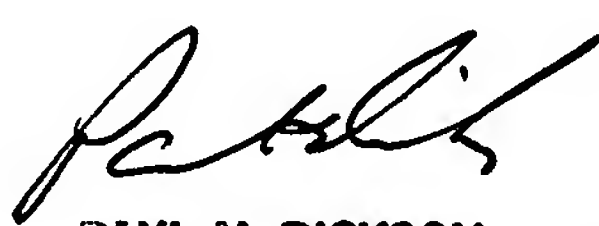
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barry J. Gooden Jr. whose telephone number is (571) 272-5135. The examiner can normally be reached on Monday-Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul N. Dickson can be reached on (571) 272-6669. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Barry J Gooden Jr.,  
Examiner  
Art Unit 3616

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3/4/06